GRAND AVENUE MIS PHASE II

WORKING PAPER #1

RELATED STUDIES, PLANS, AND PROGRAMS

Prepared for:

Maricopa Association of Governments

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DRAFT

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INTRODUCTION

An initial step in the Phase II Major Investment Study for Grand Avenue was to review documents related to the corridor. The purpose of this working paper is to present that documentation.

The next section of this paper includes, for each document reviewed:

- The study name, author, client, and date published,
- The purpose of the study,
- The published results of the study, and
- Information contained in the study as it relates to the Grand Avenue study corridor between 19th Avenue and SR 101L.

The studies are presented in chronological order, with the most recently completed studies presented first.

STUDY REVIEW

Grand Avenue Limited Expressway Design Concept Study for the Glendale Area, Final Report

Author: URS Corporation
Client: City of Glendale Transportation Department
Date: December 4, 2003

Purpose:

Following the approval of the Glendale Onboard Transportation Program by Glendale voters in November 2001, the City of Glendale initiated the study of Grand Avenue between 43rd Avenue / Camelback Road to 71st Avenue / Butler Avenue. While ADOT was in the process of constructing five grade separations along Grand Avenue within the City of Glendale, the City was interested in planning new projects in between the overpasses that would enhance access control and provide for beautification along Grand Avenue.

Results:

The study resulted in the following major design features along Grand Avenue:

- Northern Parkway traffic interchange
- Bethany Home Road and 51st Avenue grade separation structure
- Access control along Grand Avenue
- Grand Avenue signage
- Downtown access improvements
- Beautification along Grand Avenue

Information Related to Grand Avenue, 19th Avenue to SR 101L:

All information presented in this report is related to Grand Avenue between 19th Avenue and SR 101L. Key highlights include:

- Bethany Home Road underpass. 51st Avenue will be grade separated over Grand Avenue. Grand Avenue will remain at-grade and Bethany Home Road will be depressed under Grand Avenue. Connector roadways will be constructed to allow access among the three arterials. No traffic signals will be required at the junction of the three roadways.
- Closure of various intersection streets, alleys and unused driveway entrances along Grand Avenue to improve access control to the east of Grand Avenue (to the west, the BNSF railroad tracks limit most access except at mile and one-half mile intervals).
- The proposed Grand Avenue underpass at 59th Avenue and Glendale Avenue will substantially alter the manner in which vehicles enter downtown Glendale. 57th Drive and Myrtle Avenue will be used for this access from Grand Avenue, north and south of the underpass.
- The addition of dedicated right-turn lanes along northwest-bound Grand Avenue.
- Eight existing median openings along Grand Avenue have been identified for closure.
- Limiting the movements for streets that intersect Grand Avenue to right-in / right-out only.
- Beautification and landscaping along Grand Avenue medians and railroad right-of-way.
- Purchase of billboards along Grand Avenue for removal.
- Underground the existing electrical lines that run along the east side of Grand Avenue.
- Installation of new street lighting along Grand Avenue, both at new grade separations as well as between them to provide for a more uniform appearance as well as improve the aesthetics.

MAG Regional Freeway Bottleneck Study, Draft

Author: HDR Engineering
Client: Maricopa Association of Governments (MAG)
Date: December 3, 2003

Purpose:

The primary purpose of the Regional Freeway Bottleneck Study was to identify and evaluate solutions in bottleneck locations on the existing MAG regional freeway system. A secondary purpose was to research long-range capacity enhancement techniques for the freeway system. Grand Avenue was not included in the analysis.

Results:

Both I-17 and I-10 at the east end of the Grand Avenue corridor were identified as bottleneck locations. SR 101L on the west end of the study corridor was not identified as a bottleneck location.

Improvements suggested for I-10 included re-striping the section through the deck park tunnel to four lanes plus an auxiliary lane. General widening, possibly through double-decking, was suggested for I-17.

Information Related to Grand Avenue, 19th Avenue to SR 101L

Other than the I-10 and I-17 improvements mentioned above, the Regional Freeway Bottleneck Study does not contain any information related to Grand Avenue.

Regional Transportation Plan

Author: HDR Engineering, Inc.
Client: Maricopa Association of Governments (MAG)
Date: November 25, 2003

Purpose:

The Regional Transportation Plan (RTP) is a comprehensive, performance based, multi-modal and coordinated regional plan for Maricopa County, covering fiscal years (FY) 2005 through 2026. MAG as the designated Metropolitan Planning Organization (MPO) for the region develops the fiscally constrained RTP in accordance with federal, state and local requirements (which include air quality-related elements). A key related requirement is that, before they can be implemented, all regionally significant and/or federally funded transportation improvement projects, as well as any regionally significant transportation projects requiring federal approval(s), must be identified in the MAG Transportation Improvement Program (TIP), projects in which must be consistent with the RTP. Any proposed transportation improvement projects for Grand Avenue that meet these criteria therefore must be identified in the TIP and be consistent with the RTP before they can be implemented.

Results:

The RTP identifies regional improvements related to freeways, streets, transit, airports, bicycle and pedestrian facilities, freight, safety, special needs transportation, and demand and system management over a twenty-two year planning horizon. It specifies planning concepts and funds major improvement projects for Grand Avenue. Funding is generally allocated over four phases: (1) FY 2005-2010, (2) FY 2011-2015, (3) FY 2016-2020, and (4) FY 2021-2026.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The RTP states, “Grand Avenue south of SR 74 is generally planned as a partially controlled access facility. Based on the results of the recently completed MAG Grand Avenue Northwest Corridor Study, it is further defined as an enhanced arterial / limited

expressway between Loop 101 and Loop 303. The section south of Loop 101 is a partially controlled access facility (expressway or limited expressway) and may be further defined following the completion of a Major Investment Study that is in process for this corridor. Additional project details will also be determined in this study."

For reference, the RTP provides $103 million in funding for Grand Avenue between Loops 101 and 303. This is allocated as $39 million in Phase I and $64 million in Phase II. The RTP does not specify how the funding is to be sub-allocated in this section. The Grand Avenue Northwest Corridor Study (reviewed as part of this Working Paper) provides recommendations that total $107 million to $131 million. Decisions for allocating funding for this section of Grand Avenue will be made following the completion of required design studies.

For the section of Grand Avenue in the study area, the July 2003 Life Cycle Certification as incorporated into the RTP includes roughly $54 million in projects for projects in FY 2005 and later. This includes $17.2 million in right-of-way acquisitions and $36.7 million for construction. Grade separations at 59th Avenue / Glendale Avenue and 67th Avenue / Northern Avenue are scheduled for completion in FY 2006 and 2005 respectively. Grade separations being constructed and scheduled for completion by late 2004 are at 43rd Avenue / Camelback Road, 51st Avenue / Bethany Home Road, 55th Avenue / Maryland Avenue, and 75th Avenue / Olive Avenue. A grade separation at 27th Avenue / Thomas Road was completed in June 2003. Ramps connecting to Loop 101 from 91st Avenue have also been completed. The portion of these projects that fall within the RTP's time period are included in the Plan, but are called out separately.

The portion of Grand Avenue between 19th Avenue and Loop 101 received $147 million in funding in the RTP. This funding is divided between general improvements (widening, beautification, access control, etc.) and construction of grade separation structures at 19th Avenue / McDowell Road, 35th Avenue / Indian School Road, and 51st Avenue / Bethany Home Road. The improvement projects are funded in Phase 1 ($30M), Phase 2 ($20M), and Phase 4 ($97M). This schedule allows the City of Glendale to match their local funds with the funds from the Plan

Two other large projects were included in the RTP that will have an impact to Grand Avenue. The first project, the Northern Avenue Parkway, involves improvements to Northern Avenue that will make it a controlled access roadway including grade separations and direct connections to Grand Avenue, Loop 101, and Loop 303. Northern Avenue intersects Grand Avenue at 67th Avenue. The second project, El Mirage Road, will impact Grand Avenue between Paradise Lane and Thunderbird Road, where Grand Avenue is spanned by a structure. El Mirage Road intersects Grand Avenue between Greenway Road and Thunderbird Road near the BNSF Railroad.

East-West Mobility Study

Author: Entranco, Inc.
Client: Maricopa Association of Governments (MAG)
Date: 2003

Purpose:

The East-West Mobility Study was initiated to analyze the need and possible alternatives for the improvement of east-west travel through a portion of north-central Maricopa County. The study area for the East-West Mobility Study is located in north-central Maricopa County and is bounded on the north by Thunderbird Road/Waddell Road, on the west by Loop 303, on the south by Northern Avenue, and on the east by State Route 51.

Current traffic conditions were determined by a thorough review of existing traffic data and transportation studies. Data pertaining to transit, bicycle, and pedestrian facilities were also reviewed and analyzed. Socio-economic data, such as the number of residential homes and the aggregate amount of non-residential development, were gathered for use in MAG's travel demand model.

Future-year traffic conditions were also analyzed to determine if and where transportation improvements will ultimately be needed. The model was then run, generating traffic volumes along significant roadways throughout the study area. Trends in traffic growth were analyzed to determine if and where transportation improvements will be needed.

The 2002 Long-Range Transportation Plan (LRTP) was assumed to be in place for the 2020 time frame and was included in the traffic model used in the study. In addition to projects in the LRTP, a range of other projects was considered in the analysis of potential mobility improvements for the study area.

Results:

Projects were assembled into six potential "Strategy Packages", which are macro concepts that represent a broad approach to improving mobility. Individual projects support each package concept by either increasing roadway capacity or by optimizing existing roadway capacity.

Information Related to Grand Avenue, 19th Avenue to SR 101L

The East/West Mobility Study assumed the implementation of recommended improvements in the previous Grand Avenue MIS and the Grand Avenue Northwest Corridor Study (both of which are reviewed as part of this Working Paper and will also be taken into account in this study).

Final Design Concept Report for Northern Parkway, Volumes I and II

Author: URS Corporation
Client: City of Glendale Transportation Department
Date: October 1, 2003

Purpose:

The voters of the City of Glendale approved the upgrading of Northern Avenue to Northern Parkway from Grand Avenue to Loop 303 (12.5 miles). The proposed Northern Parkway will be a super street with grade-separated intersections at major cross streets to eliminate the major traffic signals on Northern Parkway. Free-flow traffic connections are planned at freeways and expressways, including Loop 303, Loop 101 and Grand Avenue. The purpose of this study was to develop and evaluate various concepts for the upgrading of Northern Avenue.

Results:

The planned roadway is a "super street" that would double the capacity of a typical arterial, due primarily to the provision of grade-separated intersections at the major intersecting arterials. Northern Parkway would have signalized intersections at minor streets to allow access to and from neighborhoods and commercial areas, but no left turns would be permitted from Northern Parkway.

The proposed roadway would provide three lanes of travel in each direction with a continuous right-turn lane or auxiliary lane between grade-separated intersections. A raised median would be provided and broken only at the signalized intersections.

Grade-separated intersection (Northern Parkway overpasses unless noted otherwise) are planned at the following nine locations:

- Sarival Avenue
- Reems Road
- Litchfield Road
- Dysart Road
- El Mirage Road
- 103rd Avenue (Northern Parkway underpass)
- 91st Avenue
- 83rd Avenue
- 75th Avenue

Signalized intersections are planned at the following eight locations:

- Bullard Road
- Between Litchfield Road and Dysart Road
- 111th Avenue
- 107th Avenue
- 99th Avenue (realigned to the west)
- Peoria Crossings Shopping Center

- 87th Avenue
- 79th Avenue

A special grade separation is planned for Grand Avenue, which will provide free flow movements between the west leg of Northern Parkway and the southeast leg of Grand Avenue. The study assumes that Grand Avenue will be upgraded to a super street or a limited expressway. In addition, a diamond interchange is planned at Loop 101 and a three-leg directional interchange is planned at Loop 303. Northern Parkway will terminate at Loop 303.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The upgrading of Northern Avenue to Northern Parkway has its eastern terminus at Grand Avenue, and the proposed connection between the two facilities is an important factor to consider in the development of this MIS. The recommended option for the connection to Grand Avenue is a median-to-median flyover ramp. The cross section includes a 6-foot inside shoulder, one 12-foot lane and a 10-foot outside shoulder in each direction. Grand Avenue would need to be widened to accommodate the flyover ramp and substantial additional right-of-way would be required for this widening. The ramp has the potential to be re-striped for two lanes in each direction should the need arise in the future.

Northwest Area Transportation Study, Draft Executive Summary

Author: Parsons Brinckerhoff
Client: Maricopa Association of Governments (MAG)
Date: July 2003

Purpose:

This study was initiated as one of three area studies to provide background information and input that would be used in the creation of the MAG Regional Transportation Plan (RTP). The area of study within this report is in the northwest portion of the Maricopa County region.

The goal of the Northwest Area Transportation Study was to identify transportation needs within the study area and to develop a prioritized list of major transportation projects to address those needs. The study developed recommendations for project priorities based on their anticipated contribution to the long-term effectiveness of the regional system.

Results:

The criteria used in the assessment and ranking of projects placed an emphasis on projects that carry major volumes of regional traffic, close critical gaps, or offer alternatives to single occupant travel in heavily congested corridors.

The Northwest Area Transportation Study identified Grand Avenue as an Arterial Roadway Corridor, subject to further study to identify additional project needs. The list

of key recommended projects from the Northwest Area Transportation Study, not all of which are funded in the RTP, includes:

- Grade separations or improvements for Northern Avenue, 51st Avenue and 35th Avenues.
- High capacity transit service on Grand Avenue, 59th Avenue, Glendale Avenue, and Bell Road.
- Improvements to I-17, I-10, Loop 101 and Loop 303 (widenings & HOV connections).
- Northern Avenue Superstreet.
- Wickenburg Bypass – long sought commercial traffic bypass of Wickenburg downtown.
- Peoria Avenue crossing of the Agua Fria River.

Recommendations for major transit projects or services were taken from the High Capacity Transit Study and Regional Transit System Study that were conducted concurrently with the Northwest Area Transportation Study.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

Additional key projects identified for further study:

- Grand Avenue MIS – currently underway to further refine the corridor.
- Northern Avenue Superstreet – City of Glendale concept for enhancing east-west capacity.
- BNSF – downtown Phoenix to SR 303L commuter rail / bus rapid transit.
- Glendale Avenue – light rail transit extension.
- 59th Avenue – Bell Road to I-10 West light rail transit / bus rapid transit.

Regional Transit System Study

Author: LKC Consulting Service, Inc.
Client: Regional Public Transportation Authority (RPTA) – Valley Metro
Date: July 2003

Purpose:

The Regional Transit System Study was developed to investigate a multi-modal transit plan for Maricopa County and northern Pinal County to be implemented by year 2030. The study evaluated all modes of public transit other than fixed-guideway / high capacity transit to determine how best to meet current and future transportation needs.

Results:

The study was intended to review all needs for transit service in the Phoenix region. It contained a number of different service types designed to serve different markets, and included:

- Local transit service
  - Fixed route local service

    - Circulator / shuttle service
- Rural / non-fixed route service
- Regional transit service
    - Regional local routes
    - Arterial regional service
    - Expressway regional service
    - Commuter vanpool service
- Paratransit
    - ADA – paratransit
    - Senior paratransit
- Transit Demand Management (TDM)
- Capital projects

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The study did find that there is a need in 2030 for additional transit along the Grand Avenue corridor, especially in the cities of Phoenix and Glendale. In terms of local transit in 2030, Grand Avenue was included as a local fixed route with one park-and-ride (Glendale Avenue) and two transit centers (Glendale Avenue and Peoria Avenue) between I-17 and SR 101L. Grand Avenue itself was also identified as a regional expressway route both within and outside our study area.

High Capacity Transit Plan, Executive Summary

Author: IBI Group
Client: Maricopa Association of Governments (MAG)
Date: June 30, 2003

Purpose:

The High Capacity Transit Plan presents a network of new transit services designed to meet the growing travel demand in Maricopa County. This long-range study considered projected travel demand in the MAG region with a forecast horizon year of 2040, at which time the MAG region is expected to have a population greater than 7 million residents. The recommendations contained in the report were to be incorporated into the development of the Regional Transportation Plan (RTP). The report focused on identifying proven transit technologies that are capable of meeting the long-range and short-range levels of travel demand within Maricopa County.

Results:

The High Capacity Transit Study reviewed the entire MAG region and indicated potential routes for services including commuter rail, light rail transit, dedicated bus rapid transit, and express bus rapid transit. It includes three commuter rail lines along existing Union Pacific Railroad and Burlington Northern Santa Fe (BNSF) Railroad routes, over ten potential extensions of the Valley's light rail system (or installation of dedicated bus rapid transit), and express bus service on every major freeway, including Loop 101, 202 and 303.

The report represents the culmination of a process that identified 29 potential high capacity transit corridors throughout Maricopa County. The study further refines the corridors and evaluates them against each other to determine which corridors were best suited to serve the growing demand for transportation capacity in Maricopa County.

The immediate action items identified by the report are:

- Refined prioritization of corridors in the RTP.
- Relocation of the BNSF freight facilities.
- Begin negotiations with Union Pacific.
- Develop a specific commuter rail network plan.
- Perform detailed Major Investment Studies on early implementation corridors.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The report considers three main types of high capacity transit: commuter rail, light rail and bus rapid transit. With respect to Grand Avenue and the facilities it comes in contact with between 19th Avenue and SR 101L, the major topic to note is that the BNSF line that parallels Grand Avenue is included as a potential commuter rail corridor. In addition, both Glendale Avenue and 59th Avenue are included as potential light rail transit (LRT) or dedicated bus rapid transit (BRT) routes, with a major connection proposed at the six-legged intersection of Grand Avenue, Glendale Avenue and 59th Avenue. The study also includes express BRT along Loop 101.

Of particular interest to the Grand Avenue corridor is the following:

> "BNSF has been considering the relocation and consolidation of several freight rail facilities in downtown Phoenix to sites north of the BNSF mainline north of the existing intermodal facility in El Mirage."

The "Phasing and Prioritization" section of the report includes six (6) corridors, broken down by Short-Term (0 – 15 years), Medium-Term (15 – 30 years) and Long-Term (30 – 40 years), that will likely have an impact on the Grand Avenue Major Investment Study:

- BNSF (Downtown Phoenix to Bell Road), Short-Term
- Glendale Avenue (I-17 to SR 101L), Short-Term
- 59th Avenue (Glendale Avenue to I-10 West), Medium-Term
- BNSF (SR 303L to Bell Road), Medium-Term
- 59th Avenue (Bell Road to Glendale Avenue), Long-Term
- Bell Road (59th Avenue to SR 303L), Long-Term

Factors Influencing Light Rail Station Boardings in the United States, Preliminary Draft

Author:	Michael Kuby, Anthony Barranda, and Christopher Upchurch (Department of Geography, Arizona State University)
Client:	Unknown – research paper
Date:	January 21, 2003

Purpose:

The purpose of this research paper was to investigate the factors that contribute to higher light rail ridership. The paper notes that critics question how successful light rail can be in low-density, automobile-oriented, polycentric US cities with smaller downtowns while proponents counter that sufficient numbers of homes and workplaces have convenient access to stations via walking, park-and-ride, or bus to develop feasible corridors connecting major residential areas with suburban concentrations of employment and the central business district (CBD).

Results:

The paper looked at data on average weekday boardings for the year 2000 at 268 stations in nine US cities representing a variety of urban settings. The results showed the importance of land use and accessibility. Employment, population, and percent renters within walking distance, as well as bus lines, park-and-ride spaces, and centrality were all significant.

The paper found that proponents hope light rail will gain moderate ridership, marginally reduce congestion and air pollution, promote infill development, and provide an alternative with higher capacity than buses along busy corridors. In addition to the factors mentioned above, the paper also found that proximity to international borders and airports is a relevant factor, as well as the location of terminal and transfer stations and the type of climate the facility will be located in.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

No part of Grand Avenue is included in the study area for this report, and thus none of the information is directly relevant.

Grand Avenue Northwest Corridor Study; SR 303L to SR 101L, Final Executive Summary

Author: URS Corporation
Client: Maricopa Association of Governments (MAG)
Date: January 2003

Purpose:

The Grand Avenue Northwest Corridor Study encompasses an 11.5-mile segment of Grand Avenue (US 60) between SR 303L and SR 101L, passing through the communities of Surprise, Peoria, El Mirage, Youngtown, Sun City West, and Sun City. The purpose of the study is to determine the long-term needs (year 2025 horizon) of the highway corridor and establish a plan for meeting those needs. Although the primary focus of the study was on highway needs, consideration was also given to transit, pedestrians, bicyclists, electric carts and special needs of the elderly and physically challenged.

Results:

Long-term roadway needs were identified through consultation with the public and agency stakeholders as well as through analyses and field review by the project team. The following long-term needs and concerns were identified:

- Widening Grand Avenue to six (6) lanes and adding some turn lanes at intersections would enable most intersections to operate satisfactorily at LOS D.
- Provide grade separations with the railroad to serve the two major hospitals in the area.
- The safety and appearance of the drainage channel along the south side of Grand Avenue east of Bell Road was identified as a concern. Landscaping and lighting were also identified.
- Signal timing and the absence of modern traffic control and ITS.
- The absence of continuous arterial streets in the general study area.
- There are no provisions for pedestrians along Grand Avenue except in front of some commercial areas.
- Crossing Grand Avenue and the railroad is very difficult due to the distance and the absence of designated walkways.
- Current transit service in the area is limited to dial-a-ride systems operated in each community, with very limited service by the metropolitan bus service primarily due to lack of funding.

The action elements of the recommendations were grouped into three priority categories.

- Priority One
  - Construct Grand Avenue as a six-lane roadway with raised medians and where possible 10-foot shoulders (available for bicyclists). This requires the development of a DCR and environmental documentation. Also includes signal-timing study, railroad crossing evaluation, and ITS "SMART" Corridor.
  - Conduct a study to determine the most appropriate action to provide emergency vehicle service across the railroad to the two major hospitals.
  - Further evaluate the proposed El Mirage / Thompson Ranch Road grade separation and extension southward.
  - Identify a funding source for the advancement of the transit system.
- Priority Two
  - Once funding is identified, develop and integrate dial-a-ride system with extension of the metropolitan bus system along arterials.
  - Local communities should encourage and financially participate in the development of the non-motorized transportation and recreation corridors along the rivers.
- Priority Three
  - Further studies should be conducted to help further define the four additional grade separations that were suggested.

The study also generated a number of other recommendations within the corridor including transit improvements, pedestrian improvements, bicycle improvements and electric cart improvements. Three potential grade separations were also included, but would need detailed engineering, cost analyses, and impact assessments before a final decision is made.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The Study identified commuter rail as a potential future option. In addition, ITS implementation on Grand Avenue as a "SMART" Corridor from downtown Phoenix to Loop 303 is recommended.

Grand Avenue Corridor BNSF Relocation Analysis and Commuter Rail Study

Author: Pharos Corporation
Client: Burlington Northern Santa Fe (BNSF) Railroad
Date: 2003

Purpose:

The Grand Avenue Corridor BNSF Relocation Analysis and Commuter Rail Study was developed with two sets of objectives in mind, one pertaining to objectives of the general public and the other pertaining to objectives of BNSF. The study presented information on existing train traffic in the corridor as well as periods of high congestion. It also investigates the possible relocation of the Mobest (19th Avenue and I-10) and Intermodal Hub (Grand Avenue and Glendale Avenue) to an area north and west of the El Mirage Automotive Facility.

Results:

All results presented in the Grand Avenue Corridor BNSF Relocation Analysis and Commuter Rail Study are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The study found that Maricopa County had the largest population growth (numeric change) of the ten largest gaining counties between April 2000 and July 2001. It also noted that along Grand Avenue, the duration of congestion during peak periods was above 60 minutes at most of the six-leg intersections along which the BNSF railroad travels.

The study presented the existing train traffic between El Mirage and Glendale and Glendale and Phoenix for all hours of the day and each day of the week, including inbound and outbound trains during the AM and PM peak periods. It then presented a possible solution to the study's objectives that included relocating both BNSF yards northwest of their current location. Based on this relocation, the BNSF would be able to eliminate all inbound and outbound trains along Grand Avenue during the AM and PM peak periods.

Some of the benefits presented in the study include:

- Provide a potential corridor for commuter rail.
- Reduction in crossings blocked during peak commuting periods.
- Improved travel along Grand Avenue and the possibility of signal coordination.
- Reduction in vehicle / train crashes.
- A reduced need for expensive grade separations.

Grand Avenue Bus Rapid Transit (Summary of Planning Level Concept)

Author: City of Glendale
Client: City of Glendale
Date: August 2003

Purpose:

The purpose of this report is to present a basic summary of the bus rapid transit concept for Grand Avenue that was first developed as part of the West Valley Scenario and has been incorporated into the Northwest Area Transportation Study.

Results:

All results presented in the Grand Avenue Bus Rapid Transit study are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The bus rapid transit concept on Grand Avenue is a unique hybrid option. It will focus on providing express bus service during peak periods, with travel in both directions, as well as provide limited bus service for the entire day.

It will include the following elements with an estimated capital and operating cost of $122.5 million:

- On-line Park-and-Ride lots
- On-line stations (transit centers)
- Queue hoppers
- Bus pullouts
- Signal preemption
- Operations

West Valley Multi-Modal Transportation Corridor Plan

Author: Entranco, Inc.
Client: Maricopa Association of Governments (MAG)
Date: July 30, 2001

Purpose:

The primary purposes of this study are to identify a vision and a master plan for the implementation of a network of multi-modal trail types within the New River and Agua Fria River Corridor. This will include defining special acquisition needs and developing an implementation strategy for the development of the entire trail system.

Results:

The study developed a 42-mile long potential trail system that incorporates elements suitable for bicyclists, pedestrians, equestrians, physically challenged persons and other non-motorized trail uses. It spans from its northern-most point in Anthem at the New River Gateway Node to its southern-most point along the Gila River in Goodyear at the Tres Rios Recreations Transition.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

There is only one location at which the New River and Lower Agua Fria River Corridor comes in contact with our study area, and it is identified in this report as a conflict area, where Grand Avenue and the BNSF Railroad intersect with the New River. At this location, the New River and Lower Agua Fria River trail will require an underpass facility. The report notes that the local jurisdiction (City of Peoria) will need to coordinate efforts with several agencies in order to develop a trail underpass facility at this location. All other recommendations within this report fall outside our study area.

The Grand Vision: Grand Avenue Image Improvement Study, Final Report

Author: Todd & Associates, Inc.
Client: City of Glendale
Date: May 2001

Purpose:

The Grand Avenue Image Improvement Study was initiated to identify design opportunities and concepts for improving Grand Avenue's overall visual image throughout the City of Glendale. The project had three main objectives

1. To identify community issues, needs, constraints and opportunities relative to the existing and desired image of the Grand Avenue corridor.
2. To identify and evaluate potential design ideas and improvement alternatives.
3. To formulate a recommendation for a comprehensive plan and multi-year phased program to improve Grand Avenue's image and function.

Results:

The study was broken down into five main areas; Analyze, Understand, Ideas, Select, and Implement. Within the Ideas area, four key elements were looked at through which the recommendations were made. These included Visual / Aesthetic, Land Use and Economic Development, Transportation, and Historic and Cultural Resources. The results of the study were broken down into three types: Policy, Program and Physical.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

Policy

- Adopt design guidelines for the Grand Avenue Corridor
- Adopt a public art master plan for Grand Avenue.
- Establish an improvement district along sections of the Grand Avenue Corridor to highlight the importance of Grand Avenue, identify its boundary, and provide additional marketing, renovation, and maintenance funds.

Program

- Schedule regular trash and debris pickup along Grand Avenue.
- Establish a working relationship with the railroad.
- Collaborate with ADOT to visually enhance the road improvements and overpasses.

Physical

- Install landscape treatments along the edges of Grand Avenue, such as street trees and shrubs. Landscape the medians along Grand Avenue.
- For continuity along the Corridor, develop uniform streetlights, traffic controls, and light posts, with the possibility of incorporating art into these elements.
- Create a larger bridge, or deck, at 59th Avenue and Glendale to provide greater pedestrian connections across Grand Avenue to the east and west sides of downtown Glendale.
- Provide pedestrian-oriented improvements enhancing convenience, comfort, safety, and accessibility. Provide a continuous detached sidewalk along the east side of Grand Avenue (minimum width of six feet).
- Build pedestrian overpasses at strategic locations along Grand Avenue. Possible locations would be at the Palmaire and Lamar alignments where Grand Avenue will be partially depressed.
- Make all bus stops ADA accessible and provide permanent shade, seating and trash containers.
- Preserve buildings that relate to the auto-influenced development of the post war period such as motor courts, gas stations, etc., as well as buildings and landmarks that relate to Glendale's agricultural past such as farmhouses and outbuildings.

MAG ITS Strategic Plan Update

Author: Kimley-Horn and Associates, Inc.
Client: Maricopa Association of Governments (MAG)
Date: April 2001

Purpose:

The purpose of this study was to update the original ITS Strategic Plan completed in 1995. Both the original and the update provide guidance for the region on consistent

implementation of ITS (Intelligent Transportation Systems) technologies along freeways and major arterials, including the use of variable message signs, closed-circuit television cameras, ramp meters and detectors all integrated by a regional communications network.

Results:

All results presented in the MAG ITS Strategic Plan Update are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The following recommendations were included as part of this report:

- Regional ITS Architecture
  - USDOT-adopted ITS standards should be used where available.
  - MAG should consider ITS as a planning element in all future transportation planning activities.
- ITS Implementation Plan
  - Locally significant ITS projects should address local needs and support regional objectives.
  - All ITS projects implemented in the MAG region should be consistent with the regional architecture that has been adopted by the MAG ITS Committee.
  - The MAG ITS Committee should request additional funding from the MAG Regional Council to assist in implementing the projects in the ITS Implementation Plan.

Within the MAG ITS Strategic Plan, Grand Avenue is designated as a "SMART" Corridor.

MAG Park-and-Ride Study, Final Report

Author: KJS Associates, Inc.
Client: Maricopa Association of Governments (MAG)
Date: January 2001

Purpose:

In January 2000, MAG embarked on this study to identify a regional system of park-and-ride lots to support the regional express bus system, carpooling, and vanpooling.

Results:

The recommended system includes ten sites for near-term development (five years) and ten sites for long-term development. Additional recommendations address design guidelines and criteria for lot development, a management and operations plan for the lots, and programming and implementation strategies.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

Two sites were identified that are in close proximity to Grand Avenue between 19th Avenue and SR 101L. The first site, located at 91st Avenue and Olive, located

approximately 2 miles west of Grand Avenue. The park-and-ride lot is programmed for the near-term and will have a capacity of 442 parking stalls.

The second site identified is located at 59th Avenue and Myrtle Avenue, located approximately ¼ mile north of Grand Avenue. The park-and-ride lot is programmed for the long-term and will have a capacity of 613 spaces (including 70 existing spaces).

Regional Off-Street System (ROSS) Plan

Author: RBF Consulting
Client: Maricopa Association of Governments (MAG)
Date: January 2001

Purpose:

The purpose of this report was to provide guidance to MAG member agencies in creating an off-street non-motorized transportation system. The study focuses on potential corridors that form the backbone of a regional off-street system of routes. The study identifies issues associated with paths/trails and non-motorized transportation, identifies corridors that could be used for paths/trails in the MAG region and provides design guidelines for paths/trails.

Results:

All results presented in the Regional Off-Street System Plan are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The key purpose to this report was to ensure the residents of the MAG region have safe, convenient access to an attractive, shared-use, non-motorized transportation system that provides a viable alternative to driving for local trips. The report contains several recommendations that MAG will either take action on, or support, depending on the agency in charge. Many of the recommendations deal with policy issues.

Pedestrian Plan 2000

Author: The Planning Center
Client: Maricopa Association of Governments (MAG)
Date: December 1999

Purpose:

In 1998, the MAG Regional Council adopted a work program that specifically directed the production of an update to the 1993 Pedestrian Plan. This update outlines programs and actions to promote better pedestrian accommodation throughout the Region's transportation system.

Results:

All results presented in the Pedestrian Plan 2000 are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The key purpose to this report was to:

1. Provide guidance for future targeted activities and programs that will result in increasing the number of people in the Region who walk instead of drive single-occupancy vehicles (SOV).
2. Identify potential capital investment projects that will contribute to an expanded, safer, and improved environment for walking in the Region.
3. Identify actions and policies that will help the group use existing and potential opportunities and bypass existing and potential constraints to increasing the number of people who walk instead of drive SOV in the Region.
4. Provide guidance for evaluating potential projects on a regional basis.

The report contains several recommendations that MAG will either take action on, or support, depending on the agency in charge. Many of the recommendations deal with policy issues.

Grand Avenue Major Investment Study (MIS)

Author: URS Greiner Woodward Clyde
Client: Arizona Department of Transportation (ADOT)
Date: September 1999

Purpose:

The purpose of this study was to refine and evaluate the options selected in the previous report (*Grand Avenue Corridor Study; Beardsley Canal to 7th Avenue / Van Buren Street)* and to select a preferred option. As compared with the previous report, the focus of this study was narrowed to the 12 miles between I-17 and Loop 101. After the conclusion of this study, the preferred option was to move into engineering and environmental documentation, final design and then construction.

Results:

All results presented in the Grand Avenue Major Investment Study are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

The report concluded with a recommendation to use portions of both Option 4 (alternating grade separations) and Option 5 (limited expressway). The Grand Avenue Steering Committee adopted the following in August 1999:

> "The Grand Avenue Steering Committee recommends that Option 4 with modifications be implemented in the Grand Avenue Corridor. The modifications

to Option 4 are to use Option 5 concepts at the 43rd / Camelback intersection and at the 59th / Glendale intersections. This recommendation allows Grand Avenue to be further upgraded to expressway standards by elimination of access and construction of additional grade separations along Grand Avenue as indicated in the MAG Long-Range Plan."

The study found that both options would meet the project objective of eliminating six-legged intersections, but that Option 4 would do far more to eliminate at-grade railroad crossings and would cost less.

The final recommendations included grade separations at the following eight intersections, with six from Option 4 and two from Option 5:

1. 27th Avenue / Thomas Avenue (Option 4)
2. 91st Avenue / Loop 101 (Option 4)
3. 51st Avenue / Bethany Home Road (Option 4)
4. 43rd Avenue / Camelback Road (Option 5)
5. 55th Avenue / Maryland Avenue (Option 4)
6. 75th Avenue / Olive Avenue (Option 4)
7. 67th Avenue / Northern Avenue (Option 4)
8. 59th Avenue / Glendale Avenue (Option 5)

The recommendations eliminate all existing seven six-legged intersections and provide four new grade separations with the railroad. Three of the grade separations occur on Grand Avenue itself.

The present study is being conducted as a follow up to this MIS.

Grand Avenue Major Investment Study (MIS), Environmental Overview

Author: Logan Simpson Design, Inc.
Client: Arizona Department of Transportation (ADOT)
Date: September 1999

Purpose:

The purpose of this environmental overview was to describe the existing environment of the Grand Avenue (I-17 to SR 101L) Major Investment Study (MIS) corridor based on available data, and to identify the potential environmental concerns for any future roadway improvements. The Environmental Overview describes the study corridor in terms of its socioeconomic, physical and natural, and cultural resource context. The study corridor includes portions of the cities of Phoenix, Glendale and Peoria.

Results:

All results presented in the Environmental Overview are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

Existing land uses within the Grand Avenue study corridor include industrial, commercial, residential, agricultural, public / quasi-public, and undeveloped. In general, the percentage of elderly and mobility disability populations within the study corridor is comparable to those populations represented in Maricopa County. Other communities of concern, including minority, low income and female head of household represent a greater population percentage within the study corridor when compared to Maricopa County percentages.

Urban and suburban environments in the Phoenix metropolitan area support a variety of native wildlife species adapted to urban conditions. These wildlife species utilize minimal habitat by vegetation in home and commercial landscaping, parks, agricultural fields, and roadway plantings. The Arizona Game and Fish Department indicates that two Wildlife species of Special Concern in Arizona (WSCA), the black-bellied whistling duck and the roundtail chub, have been documented as occurring within two miles of the study area. Both species could occur along surrounding waterways, including the Grand Canal.

The Grand Canal is not designed to carry storm flows; however, this canal conveys storm water and may be jurisdictional. Further investigation will be necessary to determine the Section 404 status of this facility. No unique farmlands exist within the corridor, through most lands within the study corridor are classified as prime farmland.

The Grand Avenue study corridor contains a total of 118 hazardous materials sites. Because of the substantial number of listed hazardous material sites within the corridor, an Initial Site Assessment should be conducted to confirm or deny the presence of hazardous materials at specific locations.

Cultural resources identified within the study corridor by previous inventories were summarized. A total of 96 sites have been previously documented within the study corridor. The majority of these sites are historic habitations or other historic structures. The area of highest cultural resource density is located along the southeastern portion of the corridor, with other areas of high density centered along the intersections of Grand Avenue with Glendale Avenue, and Grand Avenue with 83rd Avenue.

Identified cultural resources include prehistoric villages, compounds, pit houses, platform and trash mounds, a ball court, burials, storage and roasting pits, canals, agricultural features, artifact scatters, and sites of unknown types. Historic sites are also present within the study corridor. These include structures, foundations, farmhouses, a historic district, and the Grand Avenue Streetcar System.

In addition, four structures within the corridor are listed on the National Registrar of Historic Places (NRHP). Nineteen historic habitations, 21 structures / foundations, the Glendale Municipal Water Works, and one historic district in Peoria are eligible or potentially eligible for listing on the NRHP.

There are a number of Section 4(f) resources within the study area. No Section 6(f) evaluation was undertaken within this study.

Grand Avenue Corridor Study; Beardsley Canal to 7th Avenue / Van Buren Street

Author: URS Greiner
Client: Maricopa Association of Governments (MAG)
Date: May 1998

Purpose:

The purpose of this study was to investigate available options for the improvement of the entire 26-mile length of Grand Avenue from Beardsley Canal west of Sun City West to 7th Avenue and Van Buren Street in downtown Phoenix. In total, eight options were investigated that ranged from removal of Grand Avenue from six-legged intersections, to transit along Grand Avenue with reduced all-purpose traffic lanes, and to a full freeway along Grand Avenue.

Results:

All results presented in the Grand Avenue Corridor Study are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

Three options were carried forward for additional study in this report including alternating grade separations, limited expressway and full expressway. These options were considered from I-17 to Loop 101 and include interchanges at both of these freeways with Grand Avenue. Included in this study are graphical representations of potential connections to I-17 and Loop 101, as well as conceptual layouts for grade separations. While the report does not present a recommendation as to which option is preferred over the others, it does lay down a framework for additional study.

The study notes that the next step will be to prepare a Major Investment Study (MIS) and an environmental document in compliance with US Department of Transportation procedures to maintain eligibility for federal funds. It goes on to state that the MIS process should fully incorporate highway and transit alternatives, as each of the three options presented in this report included provisions for express bus service, light rail transit, or both. The MIS as recommended in this study has subsequently been completed and is reviewed separately (*Grand Avenue Major Investment Study, September 1999*).

Pedestrian Area Policies and Design Guidelines

Author: Logan Simpson & Dye
Client: Maricopa Association of Governments (MAG)
Date: October 1995

Purpose:

To better understand the needs and expectations of pedestrians in this region, the Maricopa Association of Governments (MAG) initiated 15 local case studies. This report compiles and presents the data collected.

In 1993, the MAG Regional Council formed the Pedestrian Working Group. The Working Group developed this document to provide a source of information and design assistance to support walking as an alternative transportation mode.

Results:

All results presented in the Pedestrian Area Policies and Design Guidelines are related to Grand Avenue between 19th Avenue and SR 101L, and are discussed below.

Information Related to Grand Avenue, 19th Avenue to SR 101L:

A total of 19 recommendations are included in the study. The most relevant to the Grand Avenue corridor are listed below.

- Appoint a Pedestrian Coordinator to represent the needs of the pedestrian in all planning and construction projects.
- Use the Manual of Uniform Traffic Control Devices (MUTCD) Pedestrian Warrant system to help determine the need for traffic signals and adequate time to cross streets.
- Assist in achieving air quality standards by reducing trips and cold starts through providing better and more functional pedestrian facilities, walkable routes to work and school, and access to transit.
- Provide walkways adjacent to roadways, but separate them from the curb whenever possible with landscaping, a bike lane, or on-street parking (on streets other than arterials and roads of regional significance).
- Provide shade and sufficient seating at transit stops.

An update to these guidelines has been proposed for FY 2005.
